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Quality Engineering Test Report

SERIES: SP-500 500W AC-DC SINGLE OUTPUT SWITCHING POWER SUPPLY

SAMPLE: A.SP-500-12 12V / 40 A D.SP-500-24 24V / 20 A
B.SP-500-13.5 13.5V / 36 A E.SP-500-27 27V / 18 A
C.SP-500-15 15V / 32 A F.SP-500-48 48V / 10 A

NO	TEST ITEM	TEST CONDITION / SPECIFICATION	RESULT	VERDICT
1	AC INPUT VOLTAGE RANGE	I/P:TESTING SPEC:88~264VAC O/P:FULL LOAD	E :60VAC~267VAC	P
2	LINE REGULATION	I/P:88~264VAC SPEC: O/P:FULL LOAD A: ±0.5% B: ±0.5% C: ±0.5% D: ±0.5% E: ±0.5% F: ±0.5% ±0.5%	A: 0% ~ +0.05% B: 0% ~ 0% C: 0% ~ 0% D: -0.02% ~ +0.02% E: -0.02% ~ +0% F: -0.01% ~ 0%	P
3	LOAD REGULATION	I/P:230VAC SPEC: O/P:MIN. TO FULL LOAD A: ±0.5% B: ±0.5% C: ±0.5% D: ±0.5% E: ±0.5% F: ±0.5% ±0.5%	A: -0.05% ~ +0.05% B: -0.18% ~ +0.13% C: -0.1% ~ +0.08% D: -0.02% ~ +0.07% E: -0.13% ~ +0.06% F: -0.04% ~ +0.04%	P
4	OUTPUT VOLTAGE TOLERANCE	I/P:88~264VAC SPEC: O/P:0% TO FULL LOAD A: ±1% B: ±1% C: ±1% D: ±1% E: ±1% F: ±1% ±1%	A: -0.05% ~ +0.1% B: -0.33% ~ +0.04% C: -0.04% ~ 0.2% D: -0.13% ~ +0.05% E: -0.13% ~ +0.21% F: -0.05% ~ +0.03%	P
5	RIPPLE&NOISE	I/P:230VAC SPEC: O/P:FULL LOAD A: 240mV B: 240mV C: 240mV D: 240mV E: 200mV F: 300mV	A: 99mV B: 165mV C: 101mV D: 78mV E: 87mV F: 108mV	P
6	AC INPUT CURRENT	I/P:230VAC SPEC:3.5A O/P:FULL LOAD	E : 2.4A	P
7	MAX. INRUSH CURREN	I/P:230VAC SPEC:36A O/P: FULL LOAD	E : 22A	P
8	O/P VOLTAGE ADJ.RANGE	I/P:230VAC SPEC: A: 10~13.2V O/P:MIN. LOAD B: 12~15V C: 13.5~18V D: 20~26.4V E: 24~30V F: 41~56V	A: 9.20V~13.80V B: 11.62V~16.55V C: 12.46V~19.06V D: 19.0V~27.5V E: 23.461V~32.40V F: 38.61V~58.21V	P
9	SET UP TIME	I/P:230VAC SPEC:1.5S O/P:FULL LOAD	E : 472mS	P
10	HOLD UP TIME	I/P:230VAC SPEC:20mS O/P:FULL LOAD	E : 36.2mS	P
11	EFFICIENCY	I/P:230VAC SPEC: A:84% O/P:FULL LOAD B:84% C:83% D:85.5% E:86.5% F:87%	A:84.4% B:85.73% C:83.91% D:86.7% E:86.9% F:89.27%	P

NEXT

NO	TEST ITEM	TEST CONDITION / SPECIFICATION	RESULT	VERDICT
12	OVER LOAD PROTECTION	I/P:230VAC O/P:TESTING SPEC: 105%~135%	A:109% B:125.5% C:112.5% D:123% E:109.5% F:117.9%	P
13	OVER VOLTAGE PROTECTION	I/P:230VAC O/P:TESTING SPEC: A:13.8V~16.2V B:15.5V~18.2V C:18V~21V D:27.6V~32.4V E:31V~36.5V F:57.6V~67.2V	A:14.57V B:17.57V C:20.2V D:29.3V E:35.2V F:57.92V	P
14	OVER TEMPERATURE PROTECTION & FAN ON/OFF TEST	I/P:230VAC O/P:FULL LOAD SPEC: RTH1 or RTH2 OTP > = 70°C FAN ON > = 50°C FAN OFF < = 45°C	E: OTP : 72°C FAN ON : 50℃ FAN OFF: 47℃	P
15	POWER FACTOR	I/P:230VAC O/P:FULL LOAD SPEC: 0.95	E: 0.993	P
16	GROUND LEAKAGE CURRENT	I/P:240VAC SPEC: L-FG--<3.5mA N-FG--<3.5mA	E: L-FG:0.90mA N-FG:0.72mA	P
17	INSULATION RESISTANCE	SPEC: I/P-O/P: 500VDC/100M Ohms MIN. I/P-FG: 500VDC/100M Ohms MIN. O/P-FG: 500VDC/100M Ohms MIN.	E: O/P-FG >100M Ohms I/P-O/P >100M Ohms I/P-FG >100M Ohms	P
18	DIELECTRIC / WITHSTAND VOLTAGE	SPEC: I/P- O/P: 3KVAC/ 1 min. (10mA CUT-OFF) I/P - FG: 1.5KVAC/ 1 min. (10mA CUT-OFF) O/P -FG: 0.5KVAC/ 1 min. (10mA CUT-OFF)	E: I/P-O/P :0.002mA I/P-FG :4.2mA O/P-FG :17.7mA	P
19	EMS TEST	EFT TEST: EN50082-1 IEC1000-4-4	F: CRITERIA A OK	P
		SURGE TEST: EN50082-1 IEC1000-4-5	F: CRITERIA A OK	P
20	ESD TEST	ESD TEST: EN50082-2 IEC1400-4-2	F: CRITERIA A OK	P
21	REMOTE SENSE	I/P: 230VAC SPEC:---------- O/P:FULL LOAD	D:24V	P
22	BURN-IN TEST	I/P: 230VAC O/P: FULL LOAD TA:24.3°C BURN-IN DURATION : 1 hrs	D:NON BREAK	P

PREVIOUS NEXT

<table>
<tr><th>NO</th><th>TEST ITEM</th><th>TEST CONDITION / SPECIFICATION</th><th>RESULT</th><th>VERDICT</th></tr>
<tr><td rowspan="3">23</td><td rowspan="3">ENVIRONMENT TEST
(SAMPLE C:)</td><td>1.LOW TEMPERATURE TEST
I/P:90 VAC O/P:80% LOAD
AMBIENT TEMPERATURE:-10°C</td><td>AFTER 3 hrs
POWER ON OK</td><td rowspan="3">P</td></tr>
<tr><td>2.HIGH AMBIENT TEMPERATURE FULL LOAD TEST
I/P:230VAC O/P:FULL LOAD
AMBIENT TEMPERATURE:43°C</td><td>AFTER 14 hrs
NON BREAK</td></tr>
<tr><td>3.ACCELERATED LIFE TEST
I/P:267VAC O/P:FULL LOAD
POWER ON :3 min POWER OFF :5 sec
AMBIENT TEMPERATURE:58°C
AMBIENT HUMIDITY:95%</td><td>AFTER 4 hrs
NON BREAK</td></tr>
<tr><td>24</td><td>TEMPERATURE RISE TEST T rise OF PARTS</td><td colspan="2">D: I/P :230VAC AFTER 1 hr BURN-IN
O/P :FULL LOAD TA:24.3°C
<table>
<tr><th>POSITION</th><th>P/N</th><th>TEMP</th><th>T rise</th></tr>
<tr><td>BD1</td><td>BRIDGE DIODE</td><td>43.2°C</td><td>18.9°C</td></tr>
<tr><td>Q52</td><td>MAIN TRANSISTOR</td><td>45.2°C</td><td>20.9°C</td></tr>
<tr><td>T51</td><td>MAIN TRANSFORMER WIRE</td><td>52°C</td><td>27.7°C</td></tr>
<tr><td>D61</td><td>O/P DIODE</td><td>49.7°C</td><td>25.4°C</td></tr>
<tr><td>C24</td><td>O/P FILTER CAPACITOR</td><td>51.5°C</td><td>27.2°C</td></tr>
<tr><td>L51</td><td>O/P CHOCK</td><td>58°C</td><td>33.7°C</td></tr>
<tr><td>RT</td><td>THERMISTOR</td><td>50.2°C</td><td>25.9°C</td></tr>
<tr><td>RTH1</td><td>THERMISTOR</td><td>40.0°C</td><td>15.7°C</td></tr>
<tr><td>Q2</td><td>TRANSISTOR</td><td>40.5°C</td><td>16.2°C</td></tr>
<tr><td>D1</td><td>DIODE</td><td>37.5°C</td><td>13.2°C</td></tr>
</table></td><td>P</td></tr>
<tr><td>25</td><td>LIFE CYCLE</td><td colspan="2">D: SUPPOSE C74 IS THE MOST CRITICAL COMPONENT
I/P:230VAC O/P:FULL LOAD Ta:25°C Tc74:52.2°C Life: 93054hrs
I/P:230VAC O/P:FULL LOAD Ta:40°C Tc74:57°C Life: 66717hrs</td><td>P</td></tr>
<tr><td>26</td><td>CRITICAL COMPONENT RECORD (FOR QC INSPECTION REFERENCE ONLY)</td><td colspan="3">F: FUSE :10AL/250V
BRIDGE DIODE :D15XB60
LINE FILTER :TF360 ET-28
TRANSFOMER :TF402 ETD-44
POWER SWITCHER :2SK1358 TO-3P
OUTPUT DIODE :ESAD9202 TO-3P
OUTPUT CAPACITOR :ELNA 1000uF/35V 105°C RJH
INPUT CAPACITOR :JAMICON 150uF/400V 85°C LP
P.C.B :SP-500-R4 FR-4 2 OZ DS</td></tr>
<tr><th>DATE</th><th>SAMPLE</th><th>TEST RESULT</th><th>TEST</th><th>APPROVAL</th></tr>
<tr><td>19980529</td><td>SP-500</td><td>PASS</td><td>H.C.LIOU</td><td>Max Lin</td></tr>
<tr><td>19990817</td><td>SP-500-48</td><td>PASS</td><td>H.C.LIOU</td><td>Max Lin</td></tr>
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